

CLAIMS

What is claimed is:

1. A method for creating a sequence of image frames, the method comprising:
 - generating a plurality of colors of light having a color sequence that periodically varies with a characteristic sequential color time period;
 - modulating the plurality of colors of light to provide a plurality of sub-frame images for each of the image frames;
 - projecting the plurality of sub-frame images for each of the image frames during a frame period;
 - for each image frame, each of the sub-frame images projected displaced relative to each other sub-frame image; and
 - synchronizing the periodic variation of the plurality of colors of light and the projection of the plurality of sub-frame images to assure an integer relationship between the color time period and the frame period.
2. The method of claim 1 wherein generating the plurality of colors of light comprises passing a beam of light through a rotating color filter wheel.
3. The method of claim 2 wherein the filter wheel rotates with a period that is an integer multiple of the color time period.
4. The method of claim 1 wherein synchronizing the periodic variation of the plurality of colors of light and projection of the plurality of sub-frame images comprises:
 - discovering the color time period and
 - synchronizing the frame period to an integer relationship with the color time period.

5. The method of claim 4 wherein discovering the color time period includes tracking a sequential color device.

6. The method of claim 4 wherein discovering the color time period includes monitoring a color time period set point of a sequential color device.

7. The method of claim 1 wherein the integer relationship between the color time period and the frame period includes the color time period equal to the frame period.

8. The method of claim 1 wherein the integer relationship between the color time period and the frame period includes the color time period equal to the inverse of an integer multiple of the frame period.

9. The method of claim 1 wherein the integer relationship between the color time period and the frame period includes the color time period equal to an integer multiple of the frame period.

10. A display system for creating a sequence of image frames, the display system comprising:

a spatial light modulator configured to modulate light to provide a plurality of sub-frame images for each of the image frames during a frame period;

a periodic light generator configured to generate a plurality of colors of light having a color sequence that periodically varies with a characteristic sequential color time period, the periodic light generator disposed to pass the plurality of colors of light across the spatial light modulator;

a periodic wobbling device configured to provide a relative displacement of the sub-frame images for each image frame; and

a system timing unit configured to synchronize the periodic light generator and the periodic wobbling device to assure an integer relationship between the color time period and the frame period.

11. The display system of claim 10 wherein the periodic light generator comprises:

- a sequential color device and
- a light source color modulated by the sequential color device.

12. The display system of claim 11 wherein the sequential color device comprises a rotating color filter wheel, the rotating color filter wheel having a time period of rotation that is an integer multiple of the characteristic sequential color time period.

13. The display system of claim 12 wherein the integer multiple is one and the rotating color filter wheel has a single set of primary color filter elements.

14. The display system of claim 12 wherein the integer is greater than one and the rotating color filter wheel has a quantity of sets of primary color filter elements equal to the integer.

15. The display system of claim 10 wherein the color time period equals the frame period.

16. The display system of claim 10 wherein the color time period equals the inverse of an integer multiple of the frame period.

17. The display system of claim 10 wherein the color time period equals an integer multiple of the frame period.

18. A display system for creating a sequence of image frames, the display system comprising:

- means for modulating light to provide a plurality of sub-frame images for each of the image frames during a frame period;

means for generating a plurality of colors of light having a color sequence that periodically varies with a characteristic sequential color time period and passing the plurality of colors of light to the means for modulating light;

means for displacing the sub-frame images of each image frame relative to each other sub-frame image of the same image frame; and

means for synchronizing the means for generating and the means for displacing to assure an integer relationship between the color time period and the frame period.

19. The display system of claim 18 wherein the means for generating a plurality of colors of light comprises:

a sequential color device and

a light source color modulated by the sequential color device.

20. The display system of claim 19 wherein the sequential color device comprises a rotating color filter wheel, the rotating color filter wheel having a time period of rotation that is an integer multiple of the characteristic sequential color time period.

21. The display system of claim 19 wherein the integer multiple is one and the rotating color filter wheel has a single set of primary color filter elements.

22. The display system of claim 19 wherein the integer multiple is greater than one and the rotating color filter wheel has a quantity of sets of primary color filter elements equal to the integer.

23. The display system of claim 18 wherein the color time period equals the frame period.

24. The display system of claim 18 wherein the color time period equals the inverse of an integer multiple of the frame period.

25. The display system of claim 18 wherein the color time period equals an integer multiple of the frame period.

26. A method for creating a displayed image comprising:
generating a first light beam carrying a first sequence of primary colors during a first image sub-frame time period;
modulating the first light beam during the first image sub-frame time period to generate a first modulated beam of light;
casting the first modulated beam of light onto a viewing surface;
generating a second light beam carrying a second sequence of primary colors during a second image sub-frame time period;
modulating the second light beam during the second sub-frame period to generate a second modulated beam of light; and
casting the second modulated beam of light onto the viewing surface at a position displaced relative to the first modulated beam of light in a manner to increase the effective resolution of the displayed image.

27. The method of claim 26 wherein the first and second sequences of primary colors are complete sequences of primary colors.

28. The method of claim 26, wherein each of the first and second sequences of primary colors includes two or more of red, green, blue, cyan, yellow, magenta, and white.

29. The method of claim 26 wherein the first and second light beams carrying the first and second sequences of primary colors are generated using at least one color wheel.

30. A display system comprising:
an image processing unit configured to generate at least two data arrays during a frame period, each data array defining a sub-frame image to be displayed during an image sub-frame time period;

a periodic color light generator configured to generate a sequence of primary colors during each of at least two of the image sub-frame time periods;

a light modulator configured to receive light from the periodic light generator and to generate a modulated light beam during each image sub-frame time period; and

a wobbling device configured to receive the modulated light beam and provide relative displacement between the sub-frame images during the frame period.

31. The system of claim 30 further comprising a system timing unit configured to synchronize the periodic light generator with the wobbling device.

32. The system of claim 30 wherein the light modulator is further configured to modulate the light beam based upon each of the image sub-frame data arrays.

33. The system of claim 30 wherein the periodic light generator includes a color filter wheel.